Application No.: 10/574,736   MAT-8830US
Amendment Dated: June 13, 2008
Reply to Office Action of: February 13, 2008

Remarks/Arguments:

The present invention relates to a radio communication apparatus wherein empty beacon slots are detected. Specifically, a radio communication apparatus will be able to move to the detected empty beacon slot.

On page 2, the Official Action rejects claims 1-7, 15-20 and 23-28 under 35 U.S.C. § 103(a) as being unpatentable over Salokannel (U.S. 2005/0249173) in view of Ho et al. (U.S. 2005/0259754). It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Salokannel teaches an adaptive beacon period in a distributive network. Specifically, Salokannel is able to adjust the beacon period depending on the number of apparatuses in the network. Ho teaches a system for synchronizing clocks and maintaining packet timing relationship in a wireless communication system. Specifically, Ho teaches a method for counting data frames.

Applicants' invention, as recited by claim 1, includes a feature which is neither disclosed nor suggested by the art of record, namely,

> **...a step in which the other radio communication apparatus moves its beacon slot to the empty beacon slot and transmits the beacon after the specified number of super frames, when an empty beacon slot is detected in the detection step.**

Claim 1 relates to a system for detecting and filling empty beacon slots in a frame. Specifically, when radio communication apparatuses detect an empty beacon slot, they allow a radio communication apparatus to move its transmission to occupy the detected empty beacon slot. This feature is found in the originally filed application on pages 4 and 5 and furthermore, in Figs. 9A, 9B, 9C, 10A, 10B and 10C. No new matter has been added.

In paragraph 49, Salokannel teaches that the number of beacon slots (beacon period) is made flexible depending on the number of devices that are in the network. Specifically, Salokannel states that the beacon period can be shortened to increase communication capacity ("*the number of slots during the beacon period is made flexible ... various advantages, such as increase communication capacity and reduced power consumption*"). Salokannel goes on to state that due to the decreased number of devices occupying the beacon period, vacant slots are produced ("*as shown in Fig. 8, beacon slots 8045 and 8046 of beacon period 802B are vacant. Accordingly, the number of devices occupying the beacon period has changed*"). On page 3, the Official Action takes the position that Salokannel teaches a radio communication apparatus moving to a detected empty slot after a specified number of super frames. Applicants respectfully disagree with the Official Action. Paragraphs 98, 99 and 102 of Salokannel (which refers to Figs. 7 and 8 of Salokannel) only teaches gathering unused beacon slots in the rear of the beacon period ("*of these, slot 7048 and 7049 are vacant.*"). Thus, Salokannel does not teach moving a radio communication apparatus to transmit in the detected empty beacon slot after a specified number of super frames as recited in Applicants' claim 1.

The Official Action also states that paragraph 64 of Ho teaches a method for counting super frames between a synchrous event ("*the algorithm 800 can be used to control the updating of the super frame counter (also referred to as the beacon counter) and super frame offset*"). Applicants respectfully disagree with the Official Action. Ho is able to count super frames, however, he does not suggest counting super frames in response to a radio communication apparatus detecting a vacant beacon slot and then moving to occupy that vacant beacon slot (Ho's super frame counting has nothing to do with moving to a detected empty beacon slot).

Applicants' claim 1 is different than Salokannel and Ho, because it detects an empty beacon slot and then allows a radio communication apparatus to move to the detected empty beacon slot and transmit its beacon after a specified number of super frames ("...*a step in which the radio communication apparatus moves its beacon slot to the empty beacon slot and transmits the beacon after the specified number of super frames, when an empty beacon slot is detected in the detection step..*"). In claim 1, when an empty beacon slot is detected, the communication apparatus moves its transmission to that detected empty beacon slot and then transmits the beacon after a specified number of super frames. In an example, as shown in Figs. 7A-10C, device B, which utilizes beacon slot 2 (Fig. 7A) is removed from the network (Fig. 9B) (thus leaving beacon slot 2 empty in frames F and G). When a new device G enters the network, the apparatuses detect empty beacon slot 2 and then move device G to occupy the detected beacon slot 2 (Fig. 10C) (beacon slot 2 of frames F and G) are no longer empty). Then, device G counts a specified number of super frames before it is able to transmit its beacon (in slot 2).

Applicants include the feature of "...*a step in which the radio communication apparatus moves its beacon slot to the empty beacon slot and transmits the beacon after the specified number of super frames, when an empty beacon slot is detected in the detection step..*" that the following advantages are achieved. An advantage is the ability to fill in the empty beacon slots, thus efficiently optimizing communication. Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

Claim 8 has been similarly amended to claim 1. Thus, claim 8 is also patentable over the art of record for the reasons set forth above.

New claims 29 and 30 have been added to the application. Claims 29 and 30 include similar features to claim 1. Thus, claims 29 and 30 are also patentable over the art of record for the reasons set forth above. Support for these claims can be found in Figs. 9A-10C and pages 44-46. No new matter has been added.

Dependent claims 5, 11, 12 and 15-22 include all of the features of the independent claims from which they depend. Thus, these claims are also patentable over the art of record for the reasons set forth above.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

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